Development of recombinant yeasts to detect *Salmonella* sp. and *Shigella* sp. using the response of vacuoles

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This study provided the bacteria detection based on vacuolar response in the yeast *S. cerevisiae*. Here, several bacteria strains were exposed with the yeast to analyze the alteration of vacuolar proteins. The change of vacuolar intensity was evaluated by confocal microscope after bacteria-exposing. The results showed that treatment of yeast with these bacteria increased the number of red vacuole-like organelles surrounding yeast nucleic. That means vacuoles alteration can be used as biomarker for bacteria detection. After that, the expression of vacuolar proteins under the effects of these bacteria were examined using 2-DE method for screening some specific biomarkers. Finally, the recombinant yeasts that contained biomarkers fused with different fluorescent proteins were confirmed their ability to detect bacteria specifically from 10-100 CFU/ml.
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